

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Cancelled).

Claim 2 (Previously Presented): The system according to claim 44, wherein said group of audio sources is identified with a respective group of individually accessible audio tracks.

Claim 3 (Previously Presented): The system according to claim 44, wherein said group of audio sources reflects an internal coherence with respect to said rules for spatialisation.

Claim 4 (Previously Presented): The system according to claim 44, wherein said interface unit is adapted to display:

at least one group icon representing a grouped spatialisation command, said icon being positioned according to a topology reflecting a spatialisation and being displaceable by a user, and

links between said icons expressing constraints to be applied between said group icons.

Claim 5 (Previously Presented): The system according to claim 44, further adapted to process global commands through said interface unit involving a plurality of groups of audio sources simultaneously.

Claim 6 (Previously Presented): The system according to claim 5, wherein said global commands comprise at least one among:

a balance between a plurality of groups of audio sources, and
a volume level, whereby positions of groups can be changed simultaneously in a proportional manner.

Claim 7 (Previously Presented): The system according to claim 44, wherein said constraints are one-way constraints, each constraint having a respective set of input and output variables entered by a user through said interface.

Claim 8 (Previously Presented): The system according to claim 44, further adapted to provide a program mode for the recording of mixing constraints entered through said interface unit in terms of constraint parameters operative on said groups of audio sources and components of said groups.

Claim 9 (Previously Presented): The system according to claim 8, wherein said interface unit is adapted to present each said constraint by a corresponding icon such that they can be linked graphically to an object to be constrained through displayed connections.

Claim 10 (Previously Presented): The system according to claim 44, wherein said constraints are recorded in terms of metadata associated with said audio stream.

Claim 11 (Previously Presented): The system according to claim 44, wherein each constraint is configured as a data string containing a variable part and a constraint part.

Claim 12 (Previously Presented): The system according to claim 11, wherein said variable part expresses at least one among:

- a variable type, indicating whether it acts on an audio track or said group,
- track identification data,
- a variable name,
- a variable icon,
- individual loudness,
- initial position data.

Claim 13 (Previously Presented): The system according to claim 11, wherein said constraint part expresses at least one among:

- a constraint type,
- constrained variables,
- a list of input variables,
- a list of output variables,
- constraint position,
- constraint orientations.

Claim 14 (Previously Presented): The system according to claim 44, wherein multiple audio sources for said spatialisation are accessed from a common recorded storage medium.

Claim 15 (Previously Presented): The system according to claim 14, wherein said constraints are accessed from said common recorded medium as metadata.

Claim 16 (Previously Presented): The system according to claim 15, wherein said metadata and said tracks in which said audio stream is recorded are accessed from a common file.

Claim 17 (Previously Presented): The system according to claim 44, further comprising an audio data and metadata decoder for accessing from a common file audio data and metadata expressing said constraints and recreating therefrom :

a set of audio streams from each individual track contained in said file, and
the specification of said metadata from an encoded format of said file.

Claim 18 (Previously Presented): The system according to claim 44, implemented using a computer readable storage medium including an interface to a computer operating system and a sound card.

Claim 19 (Previously Presented): The system according to claim 44, cooperating with a sound card and three-dimensional audio buffering means, said buffering means being physically located in a memory of said sound card so as to benefit from three-dimensional acceleration features of said card.

Claim 20 (Previously Presented): The system according to claim 19, further comprising a waitable timer for controlling writing tasks into said buffering means.

Claim 21 (Previously Presented): The system according to claim 44, wherein said input means is adapted to access audio tracks of said audio stream which are interlaced in a common file.

Claim 22 (Previously Presented): The system according to claim 44, adapted to cooperate with a three-dimensional sound buffer for introducing an orientation constraint.

Claim 23 (Previously Presented): The system according to claim 44, wherein said constraints comprise functional and/or inequality constraints, wherein cyclic constraints are processed through a propagation algorithm by merely checking conflicts.

Claim 24 (Previously Presented): The system according to claim 44, further comprising a means for encoding individual sound sources and a database describing the constraints and relating constraint variables into a common audio file through interlacing.

Claim 25 (Previously Presented): The system according to claim 24, further comprising means for decoding said common audio file in synchronism with said encoding means.

Claim 26 (Previously Presented): The system according to claim 44, further comprising:

a constraint system module for inputting a database describing the constraints and relating constraint variables for each music title, thereby creating spatialisation commands;
and

a spatialisation controller module for inputting said set of audio streams given by encoding means, and spatialisation commands given by said constraint system module.

Claim 27 (Previously Presented): The system according to claim 26, further comprising three-dimensional sound buffer means, in which a writing task and a reading task for each sound source are synchronised, said means thereby relaying said audio stream coming from an audio file into a spatialisation controller module and relaying said database describing the constraints and relating constraint variables for each music title into said constraint system module.

Claim 28 (Previously Presented): The system according to claim 26, wherein said spatialisation controller module further comprises a scheduler means for connecting said constraint system module and said spatialisation controller module.

Claim 29 (Previously Presented): The system according to claim 27, wherein said spatialisation controller module comprises static audio secondary buffer means.

Claim 30 (Previously Presented): The system according to claim 27, further comprising a timer means for waking up said writing task at predetermined intervals.

Claim 31 (Previously Presented): The system according to claim 26, wherein said spatialisation controller module is a remote controllable mixing device.

Claim 32 (Previously Presented): The system according to claim 44, wherein said constraint system module is configured to execute a test algorithm.

Claim 33 (Previously Presented): A spatialisation apparatus comprising:

a personal computer having a data reader for reading from a common data medium both audio stream data and data representative of constraints for spatialisation, and an audio spatialisation system according to claim 44 having its input means adapted to receive data from said data reader.

Claim 34 (Previously Presented): The spatialisation apparatus according to claim 33, wherein said computer comprises a three-dimensional sound buffer for storing contents extracted from data reader.

Claim 35 (Previously Presented): The spatialisation apparatus according to claim 34, wherein said sound buffer is controlled through a dynamic link library (DLL).

Claim 36 (Previously Presented): A computer readable storage medium containing data specifically adapted for exploitation by an audio spatialisation control system according to claim 44, comprising a plurality of tracks forming an audio stream and data representative of said processing constraints.

Claim 37 (Previously Presented): The storage medium according to claim 36, wherein said data representative of said processing constraints and said plurality of tracks are recorded in a common file.

Claim 38 (Previously Presented): The storage medium according claim 36, wherein said data representative of said processing constraints are recorded as metadata with respect to said tracks.

Claim 39 (Previously Presented): The storage medium according to claim 36, wherein said tracks are interlaced.

Claim 40 (Previously Presented): The storage medium according to claim 35, in the form of any digital storage medium.

Claim 41 (Previously Presented): The storage medium according to claim 36 in the form of a computer hard disk.

Claim 42 (Previously Presented): A computer readable internal memory unit of a general-purpose computer, comprising a software code unit for coding the system according to claim 44 and implementing the means described in said system, when said computer program product is run on a computer.

Claim 43 (Cancelled).

Claim 44 (Currently Amended): A system for controlling an audio spatialisation in real time, comprising:

a display configured to display graphical representations of a plurality of audio sources;

an input unit configured to access an audio stream coded in a common file and composed of the plurality of audio sources associated to audio tracks, the audio tracks each including ~~a signal representative of an analog sound signal~~ an analog recording of an audio source;

a constraint unit configured to receive and process constraints expressing rules for a spatialisation of said audio stream; and

an interface unit configured to enter spatializing commands to said constraint unit, wherein said interface unit enters at least one user input for effecting a spatialisation command on one audio source in a group of two or more audio sources,

the spatialisation command is effected on the audio sources based on the position of the graphical representation of the audio sources on the display,

said constraint unit is programmed to process said group of two or more audio sources as a unitary object for the application of the constraints, and

when a user moves the position of one audio source in said group of two or more audio sources, an algorithm sets the position on the display for the other audio sources in the group of two or more audio sources based on the constraints.

Claim 45 (Currently Amended): A method for controlling an audio spatialisation in real time, comprising:

displaying graphical representations of a plurality of audio sources on a display;

accessing an audio stream coded in a common file and composed of the plurality of audio sources associated to audio tracks, the audio tracks each including ~~a signal representative of an analog sound signal~~ an analog recording of an audio source;

receiving and processing constraints, the constraints expressing rules for a spatialisation of said audio stream; and

entering spatializing commands to a constraint unit,

wherein said entering enters at least one user input for effecting a spatialisation command on one audio source in a group of two or more audio sources,

the spatialisation command is effected on the audio sources based on the position of the graphical representation of the audio sources on the display,

said constraint unit is programmed to process said group of two or more audio sources as a unitary object for the application of the constraints, and

when a user moves the position of one audio source in said group of two or more audio sources, an algorithm sets the position on the display for the other audio sources in the group of two or more audio sources based on the constraints.

Claim 46 (New): The system according to claim 44, further comprising:

a decoding unit configured to decode the audio stream coded in the common file and extract the plurality of audio sources from the common file.